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THE APRIL MEETING OF THE KENTUCKY SECTION.

The sixth regular annual meeting of the Kentucky Section was held in the Physics Building, Georgetown College, Georgetown, Kentucky, on April 8, 1922. Professor C. H. Richardson, chairman, presided at both the morning and the afternoon sessions.

There were nineteen in attendance, including the following eight members of the Association:

R. V. Blair, P. P. Boyd, W. J. Brezler, J. M. Davis, H. H. Downing, Elizabeth LeSturgeon, C. H. Richardson, G. A. Seubert.

Those attending the meeting were entertained at luncheon by Professor C. H. Richardson. At the business meeting which followed the presentation of papers, Professor ELIZABETH LESTOURGEON was elected chairman and Professor C. H. RICHARDSON, secretary-treasurer. Upon the invitation of Dean Boyd, it was voted to hold the next meeting at the University of Kentucky.

The following papers were presented:

- (1) "Invariants in the singular case of quadrics" by Professor H. H. DOWNING;
- (2) "Infinite series in the theory of potential" by Professor ELIZABETH LESTOURGEON;
- (3) "Some proofs of Pascal's theorem" by Mr. R. V. BLAIR;
- (4) "The mystic hexagram configuration" by Dean P. P. BOYD;
- (5) "Kramp's faculty function" by Professor C. H. RICHARDSON.

Abstracts of the papers follow below, the numbers corresponding to the numbers in the list of titles.

1. In this paper Professor Downing considered two quadratic forms $\varphi = \sum^4 a_{ij} x_i x_j$ and $\psi = \sum^4 b_{ij} x_i x_j$, each of which is singular, the pencil of the pair, $\varphi - \lambda\psi$, having a determinant identically zero in λ . It was shown that the forms are completely classified by means of their ranks and the elementary divisors of the pencil. According to the ranks there are nine cases. These divide into thirty sub-cases according to the elementary divisors. The elementary divisors were found for each of the thirty sub-cases.

2. In the theory of logarithmic potential the distribution of mass along the boundary of a circle has been studied, and an expression for the density, in the form of a Fourier Series, has been obtained by a limiting process out of the series for the potential. Professor LeSturgeon made a similar study in the case of certain other analytic curves in the plane, both for the logarithmic potential and for the conjugate potential function.

3. After stating Pascal's theorem, Mr. Blair gave two proofs from Steiner (*Vorlesungen über Synthetische Geometrie*, volume 1, Leipzig, 1887, p. 16), one from Salmon (*A Treatise on Conic Sections*, London, 1879, p. 245), and the ordinary proof of projective geometry (cf. O. Veblen and J. W. Young, *Projective*

Geometry, volume 1, Boston, 1910, p. 111). It is not known how Pascal proved the theorem, but probably his method was one of the methods used by Steiner.

4. Dean Boyd traced the development of theorems leading up to and supplementing Pascal's theorem, mentioning the work of Euclid, Pappus, Desargues and others. Most of the time was given to proofs of the theorems concerning the Pascal lines, the Steiner points, the Cayley-Salmon lines, the Kirkman points, the Steiner-Plücker lines, and the Salmon points. Carefully drawn figures illustrated the work.

5. Professor Richardson gave a brief introduction to the calculus of finite differences, and showed how this calculus when applied to Kramp's faculty function leads to simple methods for the summation of many series. The following types of Kramp's faculty were discussed and illustrated:

$$(a + bx)^{m/b}; \quad \frac{1}{(a + bx)^{m/b}}; \quad \frac{a^{x/b}}{c^{x/b}}.$$

Reference was made to Chrystal's *Algebra*, part II, chapter 31.

ELIZABETH LESTOURGEON, *Secretary-Treasurer*.

THE DECEMBER MEETING OF THE MARYLAND-VIRGINIA-DISTRICT OF COLUMBIA SECTION.

The tenth regular meeting of the Maryland-Virginia-District of Columbia Section of the association was held at Johns Hopkins University, Baltimore, Maryland, on December 10, 1921. Mr. O. S. Adams, chairman of the Section, presided at both morning and afternoon sessions. There were forty-four in attendance, including the following thirty members of the Association:

O. S. Adams, J. J. Arnaud, R. N. Ashmun, Clara Bacon, Sarah Beall, G. A. Bingley, C. C. Bramble, J. A. Bullard, G. R. Clements, A. Cohen, A. Dillingham, H. English, J. B. Eppes, H. H. Gaver, W. M. Hamilton, W. E. Heal, L. S. Hulburt, W. D. Lambert, A. E. Landry, Florence P. Lewis, E. S. Mayer, F. Morley, F. D. Murnaghan, J. R. Musselman, C. A. Nelson, C. H. Rawlins, H. M. Robert, Jr., R. E. Root, W. F. Shenton, C. A. Shook.

An amendment to the constitution of the Section was adopted, increasing the membership of the Executive Committee from three to four in order that Washington, Baltimore, Annapolis, and the state of Virginia might each have a representative on this committee.

The following resolution was introduced by Mr. W. D. Lambert, and adopted by the Section:¹

¹ While the arrangement suggested by this resolution is clearly impractical as a working basis for the annual meetings of the Association, since all feeling of continuity or balance in the program would be sacrificed, there seems no reason why the section meetings should not respond as directly as possible to the several interests of the attendant members. The secretary of the Maryland-Virginia-District of Columbia Section refers to the Section as "nearly the banner section so far as attendance is concerned." In reference to this resolution, he remarks, "The